Claims

1. A method of amyloid fibril formation using a heterogeneous source of protein as a starting material.

2. A method according to claim 1 wherein the protein source has a high glutamine content.

3. A method according to claim 1 or claim 2 wherein the protein source is from wheat source or a wheat protein sequence from a microbiological expression system.

4. A biomaterial containing amyloid fibrils made according to any one of claims 1-3.

5. A method of producing amyloid fibrils from a high molecular weight, heterogeneous source of protein as a starting material.

6. A method according to claim 5 wherein the starting material is a wheat protein.

7. A method according to claim 6 in which the wheat protein is from a microbiological expression system.

8. A method according to claim 6 wherein the starting material is an SDS-soluble wheat protein fraction.

9. A method according to claim 7 wherein the starting material is an SDS-insoluble wheat protein fraction.

10. Amyloid fibrils produced by the method of any one of claims 1-3 or 5-9.

11. A method of producing amyloid fibrils derived from wheat, comprising:

(a) Providing wheat protein, crudely fractionated from a milled flour;

(b) Separating a heterogeneous protein mixture on the basis of solubility;

(c) Obtaining protein solutions containing a broad range of proteins of varying molecular weights and compositions;

(d) Incubation of these fractions at moderate temperatures, typically in the presence of specific compounds known to destabilise a protein's structure, to induce the formation of amyloid

12. Amyloid fibrils produced by the method of claim 11.

13. A method according to any one of claims 1-3, 5-9 or 11 wherein the method is performed *in vitro*.

14. A method according to any one of claims 1-3, 5-9, 11 or 13 wherein a denaturing compound is added to induce the formation of amyloid-like structures.

15. A method according to claim 14 wherein the denaturing compound is one or more of urea, a thiol containing reductant (e.g. dithiothreitol (DTT)), oran acid (e.g. H_2SO_4 , HCl).

16. A method according to claim 15 wherein the pH range is 2-7.5, preferably 5-7.5.

17. A method according to claims 15 or 16 wherein the temperature range is 20-70 °C, preferably about 50°C.

18. A method according to any one of claims 14-16 wherein the denaturing compound is incubated with the protein source at 25°C for up to 105 days.

19. A method according to any one of claims 14-16 wherein the denaturing compound is incubated with the protein source at 37°c for up to 105 days.

20. A method according to claims 18 or 19 wherein the incubated protein is a wheat protein.

21. A method according to claim 20 wherein the incubated protein is substantially a wheat protein sequence from a microbiological expression system.

22. A method according to any one of claims 1-3, 5-9, 11 or 13-21 claims wherein an extraneous amyloid fibril (e.g. insulin fibril) is added as a "seed" to induce amyloid fibril formation in the wheat protein treatments.

23. Amyloid fibrils produced by the methods of any one of claims 13-22.